Unit 5 - Week 4

Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-26, 23:59 IST.

Group A (From 1 to 5)

A three-phase cascaded h-bridge converter is having 4 number of cells in each phase of the converter. The converter is operated using phase shifted PWM technique with carrier frequency (f_s) = 4 kHz and the fundamental frequency = 50 Hz. The DC-link voltage of each cell is 1000 V.

1) The switching frequency of each device in the converter is ..... kHz.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 3.9,4.1

1 point

2) The first band of switching frequency harmonic at the output voltage of each cell is at, *1 point*

- 2 kHz
- 4 kHz
- 8 kHz
- 16 kHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
8 kHz

3) The first band of switching frequency harmonic at the output pole voltage of a phase is at, *1 point*

- 4 kHz
- 8 kHz
- 16 kHz
- 32 kHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
32 kHz

4) The total number of carriers required are .....

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 7.9,8.1

1 point

5) The required phase shift between the carriers is, *1 point*

- 30^0
- 45^0
- 60^0
- 90^0

No, the answer is incorrect.
Score: 0
Accepted Answers:
45^0

6) The main disadvantage of using level-shift PWM in a cascaded H-bridge converter is, *1 point*

- Unequal loss distribution
- Higher device voltage rating
- Higher device current rating
- High dv / dt stress

No, the answer is incorrect.
Score: 0
Accepted Answers:
Unequal loss distribution

7) A cascaded H-bridge converter with 10 number of cells in each phase of the converter and having DC-link voltage of each cell as V_D. The converter can produce a maximum balanced fundamental line voltage peak as, *1 point*

- $5V_D$
- $10V_D$
- $20V_D$
- $40V_D$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$20V_D$

8) In a cascaded h-bridge converter, there are 6 number of cells in each phase. Which among the following combination of the operating healthy cells (after bypassing faulty cells) can not produce an equilateral triangle of balanced line voltage, *1 point*

- (6,5,0)
- (6,4,3)
- (6,3,3)
- (5,6,1)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(6,5,0)

Group B (From 9 to 10)

A cascaded H-bridge converter with 2 number of cells in each phase of the converter is operated using level-shift PWM technique with the carrier frequency (f_s) = 10 kHz.

9) The height of each carrier is, (assume that the peak of sinusoidal reference is between ±1). *1 point*

- 1
- 2
- 0.25
- 0.5

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.5

10) The first band of switching frequency harmonic at the output pole voltage of a phase is at, *1 point*

- 5 kHz
- 10 kHz
- 20 kHz
- 40 kHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
10 kHz